

## WHAT IS CLAIMED IS:

1. An apparatus for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising:
  - 5 a channel estimator for generating a first signal by performing channel estimation using the first channel signal;
  - a channel compensator for generating a second signal by channel-compensating the second channel signal using the first signal; and
  - a power ratio detector for generating absolute values of symbols constituting
  - 10 the second signal, selecting absolute values in a predetermined length after sorting the absolute values in magnitude order, calculating an average value of the selected absolute values, calculating a square of an absolute value of the first signal, and generating the power ratio using a ratio of the average value to the square of the absolute value of the first signal.
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2. The apparatus of claim 1, wherein the power ratio detector comprises:
  - an absolute value generator for receiving symbols constituting the second signal and generating an absolute value of each of the symbols;
  - a sorter for sorting absolute values generated by the absolute value generator in
  - 20 magnitude order;
  - an average value calculator for selecting absolute values in a predetermined length among the sorted absolute values, and calculating an average value of the selected absolute values;
  - a squarer for calculating a square of an absolute value of the first signal; and
  - 25 a power ratio generator for generating the power ratio by a ratio of the average value to the square of the absolute value of the first signal.
3. The apparatus of claim 1, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of
- 30 lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

4. The apparatus of claim 3, wherein the reference point is determined according to a modulation scheme of the second channel.

5 5. The apparatus of claim 3, wherein the preset length includes absolute values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

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6. An apparatus for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising:

an absolute value generator for receiving symbols constituting a first signal generated by channel-compensating the first channel signal;

15 a sorter for sorting absolute values generated by the absolute value generator in magnitude order;

an average calculator for selecting absolute values in a predetermined length among the sorted absolute values, and calculating an average value of the selected absolute values;

20 a squarer for calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and

a power ratio generator for generating the power ratio by a ratio of the average power to the square of the absolute value of the second signal.

25 7. The apparatus of claim 6, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

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8. The apparatus of claim 7, wherein the reference point is determined according to a modulation scheme of the first channel.

9. The apparatus of claim 7, wherein the preset length includes absolute values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a  
5 preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

10. An apparatus for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising:

10 a channel estimator for generating a first signal by performing channel estimation using the first channel signal;

a channel compensator for generating a second signal by channel-compensating the second channel signal using the first signal; and

a power ratio detector for generating absolute values of symbols constituting  
15 the second signal, selecting absolute values in a predetermined length after sorting the absolute values in magnitude order, detecting a center value of the predetermined length, calculating a square of an absolute value of the first signal, and generating the power ratio using a ratio of the center value to the square of the absolute value of the first signal.

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11. The apparatus of claim 10, wherein the power ratio detector comprises:

an absolute value generator for receiving symbols constituting the second signal, and generating an absolute value of each of the symbols;

25 a sorter for sorting absolute values generated by the absolute value generator in magnitude order;

a selector for selecting absolute values in a predetermined length among the sorted absolute values, and selecting a center value of the predetermined length;

a squarer for calculating a square of an absolute value of the first signal; and

30 a power ratio generator for generating the power ratio by a ratio of the center value to the square of the absolute value of the first signal.

12. The apparatus of claim 10, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting  
5 a preset length from the selected length.

13. The apparatus of claim 12, wherein the reference point is determined according to a modulation scheme of the second channel.

10 14. The apparatus of claim 12, wherein the preset length includes absolute values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

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15. An apparatus for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising:

an absolute value generator for receiving symbols constituting a first signal generated by channel-compensating the first channel signal, and generating an absolute  
20 value of each of the symbols;

a sorter for sorting absolute values generated by the absolute value generator in magnitude order;

a selector for selecting absolute values in a predetermined length among the sorted absolute values, and selecting a center value of the predetermined length;

25 a squarer for calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and

a power ratio generator for generating the power ratio by a ratio of the center value to the square of the absolute value of the second signal.

30 16. The apparatus of claim 15, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum

value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

17. The apparatus of claim 16, wherein the reference point is determined  
5 according to a modulation scheme of the first channel.

18. The apparatus of claim 16, wherein the preset length includes absolute  
values determined by excluding a preset number of absolute values among absolute  
values existing in the selected length in descending order from a maximum value and a  
10 preset number of absolute values among the absolute values existing in the selected  
length in ascending order from a minimum value.

19. An apparatus for detecting a power ratio between a first channel and a  
second channel in a mobile communication system, comprising:  
15 a channel estimator for generating a first signal by performing channel  
estimation using the first channel signal;  
a channel compensator for generating a second signal by channel-  
compensating the second channel signal using the first signal; and  
a power ratio detector for generating absolute values of symbols constituting  
20 the second signal, calculating an average value of the absolute values, calculating a  $1/2$   
value of the average value, and then generating the power ratio by a ratio of the  $1/2$   
average value to a square of an absolute value of the second signal.

20. The apparatus of claim 19, wherein the power ratio detector  
25 comprises:

an absolute value generator for receiving symbols constituting the second  
signal and generating an absolute value of each of the symbols;  
an  $1/2$  average value calculator for calculating an average value of the absolute  
values and calculating a  $1/2$  value of the average value;  
30 a squarer for calculating a square of an absolute value of the first signal; and  
a power ratio generator for generating the power ratio by a ratio of the  $1/2$   
average value to the square of the absolute value of the first signal.

21. An apparatus for generating a power ratio between a first channel and a second channel in a mobile communication system, comprising:

an absolute value generator for receiving symbols constituting a first signal  
5 generated by channel-compensating the first channel signal;

a 1/2 average value calculator for calculating an average value of the absolute values and calculating a 1/2 value of the average value;

a squarer for calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and

10 a power ratio generator for generating the power ratio by a ratio of the 1/2 power value to the square of the absolute value of the second signal.

22. A method for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising the steps of:

15 generating a first channel signal by performing channel estimation using the first channel signal;

generating a second signal by channel-compensating the second channel signal using the first signal; and

generating absolute values of symbols constituting the second signal, selecting  
20 absolute values in a predetermined length after sorting the absolute values in magnitude order, calculating an average value of the selected absolute values, calculating a square of an absolute value of the first signal, and generating the power ratio using a ratio of the average value to the square of the absolute value of the first signal.

25 23. The method of claim 22, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

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24. The method of claim 23, wherein the reference point is determined according to a modulation scheme of the second channel.

25. The method of claim 23, wherein the preset length includes absolute values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a  
5 preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

26. A method for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising the steps of:  
10 generating an absolute value of each of symbols constituting a first signal generated by channel-compensating the first channel signal;  
sorting the absolute values in magnitude order;  
selecting absolute values in a predetermined length among the sorted absolute values, and calculating an average value of the selected absolute values;  
15 calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and  
generating the power ratio by a ratio of the average value to the square of the absolute value of the second signal.

20 27. The method of claim 26, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

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28. The method of claim 27, wherein the reference point is determined according to a modulation scheme of the first channel.

29. The method of claim 27, wherein the preset length includes absolute  
30 values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a preset number of absolute values among the absolute values existing in the selected

length in ascending order from a minimum value.

30. A method for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising the steps of:

5 generating a first signal by performing channel estimation using the first channel signal;

generating a second signal by channel-compensating the second channel signal using the first signal; and

10 generating absolute values of symbols constituting the second signal, selecting absolute values in a predetermined length after sorting the absolute values in magnitude order, calculating a center value of the predetermined length, calculating a square of an absolute value of the first signal, and generating the power ratio using a ratio of the center value to the square of the absolute value of the first signal.

15 31. The method of claim 30, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

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32. The method of claim 31, wherein the reference point is determined according to a modulation scheme of the second channel.

25 33. The method of claim 31, wherein the preset length includes absolute values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

30 34. A method for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising the steps of:

generating an absolute value of each of symbols constituting a first signal



generated by channel-compensating the first channel signal;  
    sorting the generated absolute values in magnitude order;  
    selecting absolute values in a predetermined length among the sorted absolute values and selecting a center value of the predetermined length;  
5       calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and  
    generating the power ratio by a ratio of the center value to the square of the absolute value of the second signal.

10       35.     The method of claim 34, wherein the predetermined length is a length determined by separating the sorted absolute values into a predetermined number of lengths centering on a preset reference point, selecting a length including a minimum value of the absolute values among the predetermined number of lengths, and selecting a preset length from the selected length.

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    36.     The method of claim 35, wherein the reference point is determined according to a modulation scheme of the first channel.

    37.     The method of claim 35, wherein the preset length includes absolute  
20 values determined by excluding a preset number of absolute values among absolute values existing in the selected length in descending order from a maximum value and a preset number of absolute values among the absolute values existing in the selected length in ascending order from a minimum value.

25       38.     A method for detecting a power ratio between a first channel and a second channel in a mobile communication system, comprising the steps of:

    generating a first signal by performing channel estimation using the first channel signal;

    generating a second signal by channel-compensating the second channel signal  
30 using the first signal; and

    generating absolute values of symbols constituting the second signal, calculating an average value of the absolute values, calculating a  $1/2$  value of the

average value, and then generating the power ratio by a ratio of the  $1/2$  average value to a square of an absolute value of the first signal.

39. A method for detecting a power ratio between a first channel and a  
5 second channel in a mobile communication system, comprising the steps of:
- generating an absolute value of each of symbols constituting a first signal generated by channel-compensating the first channel signal;
  - calculating an average value of the absolute values and calculating a  $1/2$  value of the average value;
  - 10 calculating a square of an absolute value of a second signal generated by performing channel estimation using the second channel signal; and
  - generating the power ratio by a ratio of the  $1/2$  average value to the square of the absolute value of the second signal.